Patent claims

1. Method for producing monocrystalline structures, parts or workpieces,
in particular from metal superalloys,
on substrates (18),
in particular with a monocrystalline structure or monocrystalline structures by epitaxial growth,
a surface (11) to be treated of the component (6) being melted by an energy input of an energy source (15) by means of a focal spot (3) of the energy source (15),
material (13) being fed to the molten area, and
the fed material (13) being melted completely,
or fed material (13) being melted with the surface (11),
it being possible for the molten material to be brought into the monocrystalline structure, and
the molten material being left to solidify,

characterized

in that the focal spot (3) has a substantially linear, elliptical or rectangular geometry.

2. The method as claimed in claim 1,
characterized in that

the energy input takes place by a laser (15).

3. The method as claimed in claim 1, characterized in that

the energy input takes place by electron beams.

4. The method as claimed in claim 1, characterized in that

the focal spot (3), which is produced by the energy input, to produce a molten area with a substantially linear, elliptical or rectangular geometry.

5. The method as claimed in claim 1, characterized in that

the size of the focal spot (3) is changed during the method.

6. The method as claimed in claim 1, characterized

in that the focal spot (3) has profile ends (5), and
in that the intensity of the energy input is increased at the profile ends (5) as compared with the middle area of the focal spot (3).

7. The method as claimed in claim 1, characterized

in that the feed of material takes place by means of at least one material feed (30), and
in that the material feed is varied in terms of time and location.

8. The method as claimed in claim 1, characterized in that

the temperature of the focal spot (3) is controlled.

9. The method as claimed in claim 1 or 5, characterized

in that the focal spot (3) is moved over the substrate (18) in a direction of advancement (4),
in that the substrate (18) has an area to which material (13) is added, and
in that the focal spot (3) is adapted to the geometry of this area in such a way that a width of the focal spot (3) is adapted to the width of this area transversely in relation to the direction of advancement (4).

10. The method as claimed in claim 1, characterized

in that the focal spot (3) is moved over the substrate (18) in a direction of advancement (4),
in that the direction of advancement (4) lies in the direction of the linear extent of the surface (11) to be treated,
and in that the energy source (15) produces à focal spot (3)
the dimension of which transversely in relation to the direction of advancement (4) corresponds to the entire width of the surface (11) to be treated and
a complete pass over the surface (11) to be treated for applying a coherent layer of the material (13) takes place in a single continuous advancing movement.